

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

1. (currently amended): A gas supplying apparatus for atomic layer deposition, which generates a source gas by vaporizing a powder source and supplies the source gas into a reaction chamber of an atomic layer deposition apparatus, the apparatus comprising:

a container ~~containing~~ including an upper portion, a middle portion and a lower portion, wherein the powder source is located in the lower portion of the container;

a cover, which is installed in ~~[[an]]~~ the upper portion of the container and covers the container;

a gas inlet tube, which supplies a carrier gas into the middle portion of the container and includes a preheating portion wound on an outer circumference of the container and a connection portion for connecting the preheating portion and a carrier gas storage tank;

a gas outlet tube, which exhausts the source gas generated in the container together with the carrier gas;

a heating unit, heating the container and the preheating portion of the gas inlet tube together;

a temperature sensor, which detects temperature in the container; and

a temperature controller, which controls a power supply of the heating unit depending on a value of temperature detected by the temperature sensor,
wherein a plurality of guide plates formed of a plurality of layers are formed in the container, so as to elongate a gas exhaust path, and wherein the outlet of the gas inlet tube is horizontally installed in the middle portion of the container.

2. (original): The apparatus of claim 1, wherein the heating unit is a heater, which is installed to surround the container and the preheating portion of the gas inlet tube.

3. (original): The apparatus of claim 2, further comprising a casing, which surrounds the heater and the container for protection.

4. (previously presented): The apparatus of claim 3, wherein the casing is formed of a thermally insulating material, so as to prevent heat generated in the heater from dissipating outside.

5. (previously presented): The apparatus of claim 3, wherein a thermally insulating material is attached inside the casing such that heat generated in the heater is prevented from dissipating outside.

6. (previously presented): The apparatus of claim 1, wherein the heating unit is a heater, which is supported by the cover, and is placed in the container, and heats the container.

7. (cancelled):

8. (cancelled):

9. (cancelled):

10. (original): The apparatus of claim 1, further comprising a casing, which surrounds the container and the preheating portion of the gas inlet tube,

wherein the heating unit comprises:

a working fluid, which is filled in a space between the container and the casing; and

a thermoelectric device, which is installed to contact an outside of the casing thermally and heats the working fluid.

11. (original): The apparatus of claim 10, wherein the thermoelectric device is installed to contact a bottom surface of the casing thermally.

12. (original): The apparatus of claim 10, wherein the thermoelectric device is a Peltier device.

13. (original): The apparatus of claim 10, wherein a thermal conductive material is interposed between the casing and the thermoelectric device.

14. (original): The apparatus of claim 13, wherein the thermal conductive material is a thermal compound or a thermal pad.

15. (original): The apparatus of claim 1, wherein the preheating portion of the gas inlet tube is wound several times along an outer circumference of the container.

16. (currently amended): The apparatus of claim 1, wherein the ~~preheating portion of the gas inlet tube is wound in a serpentine pattern along an outer circumference of the container~~ outlet of the gas inlet tube directs the source gas such that the source gas does not transgress the powder source.

17. (currently amended): The apparatus of claim 1, wherein the ~~container is formed of quartz~~ outlet of the gas inlet tube directs the source gas such that the source gas does not impinge upon the powder source.

18. (original): The apparatus of claim 1, wherein the container includes an internal container holding the powder source and an external container surrounding the internal container.

19. (original): The apparatus of claim 18, wherein the internal container is formed of quartz, and the external container is formed of a metallic material.

20. (original): The apparatus of claim 19, wherein the external container is formed of stainless steel.

21. (cancelled):

22. (previously presented): The apparatus of claim 1, wherein the plurality of guide plates are installed to form a gas exhaust path having a zigzag shape.

23. (previously presented): The apparatus of claim 1, wherein a plurality of steps are formed at a predetermined gap in the container in a height direction, and the plurality of guide plates respectively are supported by the plurality of steps.

24. (previously presented): The apparatus of claim 1, wherein the plurality of guide plates are formed of glass or quartz.

25. (currently amended): A gas supplying apparatus for atomic layer deposition, comprising:
a container including an upper portion, a middle portion and a lower portion;
a powder source located in the lower portion of the container;
a cover, which is installed in an upper portion of the container and covers the container;

a gas inlet tube, which supplies carrier gas into the container;

a gas outlet tube, which exhausts the source gas generated in the container together with the carrier gas;

a heating unit, which heats the container;

a temperature sensor, which detects temperature in the container; and

a temperature controller, which controls a power supply of the heating unit depending on a value of temperature detected by the temperature sensor,

wherein a plurality of guide plates are formed in the container,

wherein an outlet end of the gas inlet tube is installed such that the carrier gas is not injected toward the powder source, and wherein the outlet end of the gas inlet tube is installed in the container above the powder source.

26. (original): The apparatus of claim 25, wherein the outlet end of the gas inlet tube is horizontally installed in a middle portion of the container.

27. (currently amended): The apparatus of claim 1, wherein the gas outlet tube is horizontally installed near an upper end of the container above the outlet of the gas inlet tube.

28. (original): The apparatus of claim 1, wherein the temperature sensor is a thermocouple.

29. (original): The apparatus of claim 1, wherein valves for regulating gas flow are installed in each of the connection portions of the gas inlet tube and the gas outlet tube.

30. (currently amended): The apparatus of claim ~~[[1]]~~ 18, wherein a ~~powder source supply hole for supplying a powder source into the container is installed in the cover~~ the outlet of the gas inlet tube is in the external container above the highest point of the internal container.

31. (new) A gas supplying apparatus for atomic layer deposition, comprising:

- a container including an upper portion, a middle portion and a lower portion;

- a powder source located in the lower portion of the container;

- a cover, which is installed in an upper portion of the container and covers the container;

- a gas inlet tube, which supplies a carrier gas;

- a gas outlet tube, which exhausts the source gas generated in the container together with the carrier gas;

- a heating unit, heating the container and the preheating portion of the gas inlet tube together;

- a temperature sensor, which detects temperature in the container;

- a temperature controller, which controls a power supply of the heating unit depending on a value of temperature detected by the temperature sensor; and

a plurality of guide plates formed of a plurality of layers,
wherein the outlet of the gas inlet tube and the inlet of the gas outlet tube are oriented perpendicular from the direction in which the powder source is located, wherein the plurality of guide plates are located between the outlet of the gas inlet tube and the inlet of the gas outlet tube, and wherein the plurality of guide plates, the outlet of the gas inlet tube and the inlet of the gas outlet tube are located a distance from the powder source such that dispersion of the powder source hardly occurs.

32. (new) The apparatus of claim 31, wherein the guide plates elongate a gas exhaust path between the outlet of the gas inlet tube and the inlet of the gas outlet tube such that the powder source is more effectively prevented from being exhausted together with the carrier gas.

33. (new) The apparatus of claim 31, wherein the gas outlet tube is filter free.

34. (new) The apparatus of claim 31, further comprising a plurality of steps in sidewalls of the container, wherein the guide plates are located on horizontal portions of the steps.